

# **NSTAR's Energy Efficiency Programs**

## **Cleaner Technology and Energy Efficiency Structuring a Competitive Advantage**

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**NSTAR Electric & Gas**



# Today's Agenda

- **Why Energy Efficiency?**
- **C&I Program Overview**
- **Case Study**
- **NSTAR Contact Information**
- **Questions and Discussion**



# Why offer Energy Efficiency Programs & Services?

- **More efficient customer operations** – When our commercial and industrial customers use energy more efficiently, they become more profitable and more competitive. That means they stay in Massachusetts and stay in our service territory.
- **Increased property value** -By installing energy efficient equipment, customers will have better, longer lasting equipment. Conversely, by investing in customer's facilities, NSTAR is able to reduce electrical infrastructure expenditures thereby benefiting all customers.
- **Fewer emissions** - With each kWh saved, less CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>2</sub> are generated. Using energy wisely means we all get to live and work in a better, healthier environment.

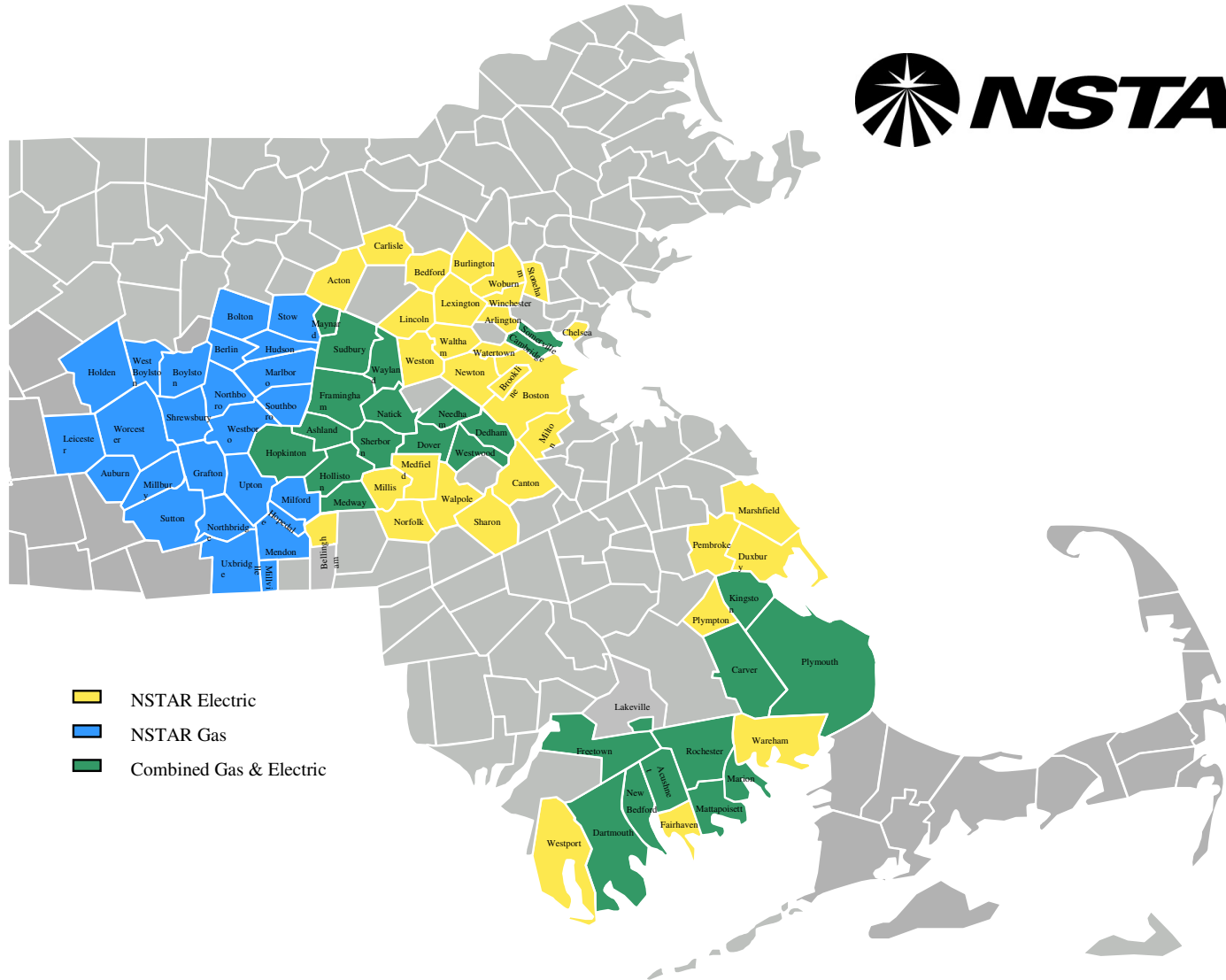





# Customer Benefits to investing in EE

- Lower Operating Costs
  - Decreased energy costs over life of equipment
  - Decreased O & M costs over life of equipment
- Improved asset value due to better quality equipment
- Increased comfort & health levels for employees
- Increased employee attendance and performance
- Increased energy-saving behavior among staff

**Investing in Energy Efficiency can make you more competitive.**





-  NSTAR Electric
-  NSTAR Gas
-  Combined Gas & Electric





# 2007 C&I Program Overview

- Construction Solutions
- Business Solutions
- Engineering Services Solutions
- Building Performance Programs
- Training and Education
- Gas Programs
- Demand Response



# Construction Solutions

- Focus is on time-dependent opportunities: New construction, renovations, and time sensitive equipment replacement.
- Available to all C&I customers
- Customer Incentive Structure:

## *Consistent across all customer sectors*

- **Prescriptive:** based on an average of 75% of incremental cost
- **Custom:** up to 75% of actual incremental cost
- **Comprehensive Design:** up to 90% of incremental cost or a 1 year payback, whichever is less.
- **Comprehensive Chiller:** up to 90% of incremental cost & up to 75% of total project cost for eligible retrofit measures or an overall 1 year payback, whichever is less.



# Construction Solutions (cont.)

- **Program Tracks:**
  - **Prescriptive:** Pre-set incentive \$ for ECM. Examples include lighting and lighting controls, motors (new construction and motor replacement), variable speed drives (VSDs), new HVAC equipment (new construction and replacements), air compressors.
  - **Custom:** For non-prescriptive ECMs only, requires \$ and energy analysis justifying savings and cost effectiveness.
  - **Comprehensive:** Integrating ECM and building systems for optimal energy use.
- **Customer & Engineering Services Incentives**





# Construction Solutions (cont.)

- **Comprehensive Design (CD)**
  - Examines larger buildings (>150,000 sq ft.) with > 75 tons cooling for integrated HVAC, architectural, and lighting systems design opportunities.
  - Identifies cost effective design alternatives prior to final design & construction
  - Customer incentives cover up to 90% of incremental costs of installing the energy efficiency measures OR buy-down to one-year payback, whichever is less.
  - Requires NSTAR involvement from the preliminary design phase on with the full design team.



# Construction Solutions (cont.)

- **Comprehensive Chiller**

- For projects involving end-of-life HVAC system replacements in buildings >50,000sq.ft and Chiller Size >75 tons Address demand side of HVAC use by reducing cooling load
- Project must include minimum of 3 ECMs that provide substantial energy savings that reduce HVAC cooling load (tons)
- Can earn enhanced incentives up to 90% of incremental cost differential between standard and high efficiency option OR a buy-down to a one year payback, whichever is less
- Cost sharing for engineering services (assoc w/qualifying electric savings)
- Design and commissioning services



# Business Solutions

- Focus is on upgrades to Existing Equipment
- Available to all C&I but focus is >200kw customers
- Customer Incentive Structure:

## *Consistent across all customer sectors*

- Prescriptive: based on an average of 50% of project cost
- Custom: up to 50% of actual project cost
- No “enhanced” comprehensive incentives



# Business Solutions (cont'd)

## Program Tracks:

- **Prescriptive:** Pre-set incentive \$ for ECM. Examples include lighting and lighting controls, variable speed drives (VSDs) and motors, Energy Management Systems (EMS), vending machine controls
- **Custom:** For non-prescriptive ECMs only, requires \$ and energy analysis justifying savings and cost effectiveness.
- **Customer & Engineering Services Incentives**



# Building Performance Programs

- **ENERGY STAR Benchmarking** - comparing customers of like facilities to assess and address energy efficiency opportunities
  - Provides benchmarking with EPA “Portfolio Manager”
  - Provides technical assistance, reporting & on-going support
  - Targets mid-size account customers
  - Serves as a feeder for BS/CS Program
- **Retro-commissioning (RCx)** - “tuning up” existing facilities to current optimal energy efficient standards
  - optimizes building performance by:
    - reducing energy waste
    - obtaining energy cost savings
    - fixing existing “low cost, no cost” problems





## Building Performance Programs (cont'd)

- **Compressed Air Leak Detection and Remediation Program**
  - Helps customers understand the costs of compressed air, identify opportunities to improve system performance and design
  - For qualifying customers:
    - Subsidizes system assessments and leak detection surveys
    - Offers incentives for systematic, documented leak detection and repairs on a semi-annual basis, for up to three years



# Training & Education

- **Training**
  - Advanced Buildings
  - Building Operator Certification (BOC), offered through NEEP
  - End-use technical trainings in conjunction w/MAEEP, including:
    - Compressed Air Challenge (Levels I & II), Chilled Water System Assessment Tool Workshop, Motor Systems Assessment End-User Training, Best Practices in Fan System Efficiency, Lighting for Profit Workshop
  - Can earn Continuing Education Credits (CEU's)



# NSTAR Gas

## • Rebates for Commercial Customers:

- High Efficiency Fryers for Commercial Cooking
- Low-Intensity Infrared Heating
- High Efficiency Heating Equipment
- ENERGY STAR Thermostats
- Custom measures



# Demand Response

## Demand Response Programs

- Independent System Operator-New England (ISO-NE)
- Customers reduce their electricity consumption or turn on backup generation in response to either **high wholesale prices** or **system reliability** events
- Customers paid for performance based on wholesale market prices
- Load Response Programs (LRP)
  - Price Program
    - Price Response: Customers respond to Wholesale Spot Prices as determined by the market
  - Reliability Program
    - Demand Response: Customers respond to system reliability issues as determined by ISO-NE



# Demand Response (cont'd)

## NSTAR's Role

- DR Service Provider
- Developing a DR incentive program for projects that are:
  - Time dependent (new construction, planned renovations)
  - Existing facilities
- Available Tools
  - Engineering studies, load assessments
- Expected release: Q2, 2007, with \$500K to \$1Million budget
- Sample Opportunities
  - Dimmable ballasts
  - Ice storage systems
  - Advanced EMS controls
  - Other curtailable measures





**Crystal Ice Company**  
**A Case Study for**  
**High Performance Equipment Replacement**  
**NSTAR Construction Solutions**



# Project Details

- Ice Plant in New Bedford, MA
- Annual ice production of 51,000 tons
- The plant produces four or five different types of ice (“40/60”, “Annex”, “Cart”, block, cubes) using individual compressor set up with R-22 refrigerant and reciprocating compressors
- Existing plant required manual operation of all compressors and valves, needed continual adjustment
- New plant is centralized screw compressors with ammonia refrigerant and ice making plates, is fully automated with remote monitoring capability



# Project Results

## Project Results

- 3.7 million kWh savings
- 3.0 million gallons of water and sewage savings
- \$440,000 total cost reduction
- Incremental cost of \$1.2 million
- Simple PB of 2.7 years before incentive
- NSTAR incentive \$690,000
- Simple PB w/incentive is reduced by 50%+
- More efficient ice production, reduced ice waste, better reliability
- Plant manager: “I have my life back”.



# Sampling of Current Projects

- **Business Solutions**
  - **Lighting: HID to high intensity fluorescent, occupancy sensors, high performance T8**
  - **Compressed air leak repairs, system and controls upgrades**
  - **Prescriptive and custom EMS projects, Benchmarking and retro-commissioning**
  - **HVAC drives and motors**
  - **Redesigned humidification systems controls and controls**
  - **Chiller consolidations**
  - **Refrigeration controls and compressor upgrades**
  - **Process equipment replacements, upgrades including process motor VSDs.**



# Sampling of Current Projects (cont'd)

- **Construction Solutions**

- **Lighting: High Performance T8 and T5 systems, high efficiency fixtures, high intensity fluorescent, occupancy sensors, daylight dimming (Prescriptive or Performance Lighting)**
- **Premium efficiency HVAC equipment and enhanced controls (Prescriptive)**
- **New chiller plants (Custom)**
- **VSD air compressors, cycling driers, and enhanced storage (Prescriptive)**
- **Premium efficiency motors (Prescriptive)**
- **HVAC drives (Prescriptive)**
- **Comprehensive Design in biotech manufacturing facilities (Custom)**





# Whom at NSTAR should you contact?

- **Energy Efficiency**
  - Specific customer project-related issues for non-strategic accounts
  - Policy/Program questions
  - Training Programs
  - Market Transformation Issues
  - Technology Issues/Eligibility
  - General Questions
- **Strategic Acct Exec:**
  - Specific customer project-related issues for strategic accounts & municipal customers



**To serve our customers and our trade allies**

## **C&I Energy Efficiency Department**

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**Questions?**

**Open Discussion.**

**Thank you.**

